UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,602	09/15/2003	Sung Uk Moon	242752US90	8504

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
PANWALKAR, VINEETA S

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
12/15/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 11-14* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-4 and 11-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some *   c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since

this application is eligible for continued examination under 37 CFR 1.114, and the

fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous

Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's

submission filed on 12/4/08 has been entered

Response to Arguments

2.   Applicant's arguments filed 11/7/08 have been fully considered but they are not

persuasive.

2a.   Regarding amended claims 1 and 11, applicant argues that previously cited

reference Zhu et al. (US 7043210 B2, hereinafter, Zhu), fails to disclose the

newly added limitation "such that a portion of a bit sequence which represents

constellation points in a constellation plane in accordance with a first modulation

technique of the modulation techniques is identical with a bit sequence which

represents constellation points in a constellation plane in accordance with a

second modulation technique of the modulation technique" because it modulates

two bits (Fig. 4, bits B2 and B3) using one modulation technique (16-QAM) and

the other two bits (Fig. 4, bits B0 and B1) using the other modulation technique

(QPSK).

However, it is pointed out that a 16-QAM modulated signal is defined by four bits in a constellation plane, while a QPSK modulated signal is defined by two bits in a constellation plane. Therefore, inherently, all four bits B0-B3 shown by Zhu in Fig. 4 define a constellation point on the constellation plane in accordance with 16-QAM. Thus, inherently, the first two bits B0 and B1 of sequence B0 B1 B2 B3(claimed portion of a bit sequence representing constellation points in a constellation plane) in any constellation point on the constellation plane, in accordance with 16-QAM (claimed first modulation technique) are the same as the two bits B0 and B1 (i.e. identical with bit sequence representing constellation points in a constellation plane) in the constellation point on the constellation plane, in accordance with QPSK (claimed second modulation technique) (See column 5, lines 1-21), since four bits B0 B1 B2 B3 completely define a constellation point in a constellation plane in accordance with 16-QAM, while only two bits B0 and B1 completely define a constellation point in a constellation plane in accordance with QPSK. Thus, contrary to applicant's argument, Zhu does indeed disclose the newly added limitation and a rejection based on this line of reasoning follows.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

3.   Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhu

et al. (US 7043210 B2), hereinafter, Zhu.

3a.   Regarding claims 1 and 11, Zhu discloses a modulation device (and

corresponding method as per claim 11), comprising:

-       a modulation unit (Fig. 2, processor 22 encodes data to be transmitted and

        is interpreted as claimed modulation unit, see column 4, lines 8-17)

        configured to modulate data in a hierarchical manner (Column 5, lines 1-21)

        using multiple types of modulation techniques (Column 5, lines 1-21, wherein

        QPSK and 16QAM are interpreted as claimed multiple types of modulation

        techniques) and to produce hierarchically modulated data that includes signal

        states for the multiple types of modulation techniques (Column 5, lines 1-21),

        such that a portion of a bit sequence (bits B0 and B1 of the bit sequence B0

        B1 B2 B3) which represents constellation points in a constellation plane in

        accordance with a first modulation technique (16-QAM) of the modulation

        techniques is identical with a bit sequence (bits B0 and B1) which represents

        constellation points in a constellation plane in accordance with a second

        modulation technique of the modulation technique (Column 5, lines 1-21 and

        Fig. 4. A 16-QAM modulated signal is inherently defined by four bits in a

constellation plane, while a QPSK modulated signal is defined by two bits in a

constellation plane. Therefore, inherently, all four bits B0-B3 shown by Zhu in

Fig. 4 define a constellation point on the constellation plane in accordance

with 16-QAM. Thus, inherently, the first two bits B0 and B1 of sequence B0

B1 B2 B3(claimed portion of a bit sequence representing constellation points

in a constellation plane) in any constellation point on the constellation plane,

in accordance with 16-QAM (claimed first modulation technique) are the same

as the two bits B0 and B1 (i.e. identical with bit sequence representing

constellation points in a constellation plane) in the constellation point on the

constellation plane, in accordance with QPSK (claimed second modulation

technique) (See column 5, lines 1-21), since four bits B0 B1 B2 B3 completely

define a constellation point in a constellation plane in accordance with 16-

QAM, while only two bits B0 and B1 completely define a constellation point in

a constellation plane in accordance with QPSK.)

- a transmission unit (Fig. 2, unit 24) configured to transmit the hierarchically

   modulated data (Column 4, lines 17-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4.   Claims 2-4 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Golitschek et al. (WO 02/067491 A1), hereinafter, Golitschek.

4a.   Regarding claims 2 and 12, Zhu discloses all the limitations claimed, but fails to explicitly disclose claimed sampling pattern generating unit.

In the same field of endeavor, however, Golitschek discloses:

- a sampling pattern generating unit (Fig. 5, unit 15) configured to generate a sampling pattern which is a constellation pattern in a phase defining sampling space for quantizing data in accordance with a modulation technique, wherein the modulation unit (Fig. 5, unit 13) modulates data based on the sampling pattern (Page 16, last paragraph).

Thus, it would have been obvious to a person of ordinary skill in the art to use a sampling pattern generation unit disclosed by Golitschek to generate the sampling patterns for each the modulation techniques used by Zhu because Golitschek's technique provides flexibility by allowing rearrangement of signal constellations that result in increased performance at the decoder (Page 4, last two paragraphs).

4b.   Regarding claims 3 and 13, Zhu and Golitschek disclose all the limitations claimed.

Zhu further discloses the claimed multiple types of modulation techniques to be QPSK (claimed multi-phase phase shift keying) and 16-QAM (claimed multi-value quadrature amplitude modulation) (Column 5, lines 1-21).

Thus, it would have been obvious to a person of ordinary skill in the art that Golitschek's sampling unit would be used by Zhu to generate sampling patterns defining space in one of claimed multi-phase phase shift keying and multi-value quadrature amplitude modulations so as to achieve Zhu's hierarchical modulation.

4c.   Regarding claims 4 and 14, Zhu and Golitschek disclose all the limitations claimed.

Golitschek further shows transmitter signaling the sequence of constellation patterns used to the receiver (Page 17, second paragraph).

It would have been obvious to a person of ordinary skill in the art to modify Golitschek's technique and to transmit the constellation pattern itself (claimed sampling pattern) along with the modulated data as claimed, because this will allow save storage space at the receiver and allow for flexibility in using any constellation pattern desired by the transmitter without having to make corresponding change in the receiver.

Contact Information

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINEETA S. PANWALKAR whose telephone number is (571)272-8561. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. S. P./
Examiner, Art Unit 2611

/Mohammad H Ghayour/
Supervisory Patent Examiner, Art Unit 2611